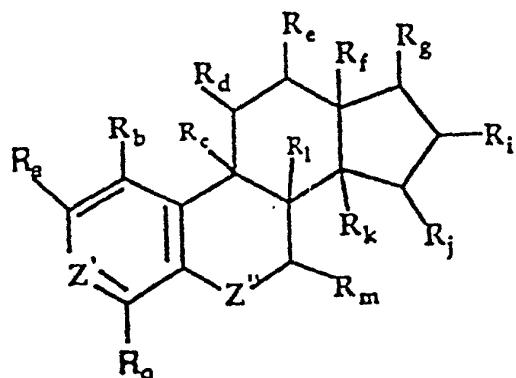


Claims

1 1. A method for treating a mammalian disease
2 characterized by abnormal cell mitosis, said method
3 comprising administering to a mammal a cell-mitosis-
4 inhibiting compound of the formula below, said compound
5 being administered in an amount sufficient to inhibit cell
6 mitosis:

7



8 **wherein:**

9 I. R_a - R_o are defined as follows:

-OCOR₁, -SR₁, -F, -NHR₂, -Br, or -I; and R_g is -R₁, -OR₁, -OCOR₁, -SR₁, -F, -NHR₂, -Br, -I, or -C≡CH;

14

B) each R_a , R_b , R_c , R_f , R_k , R_1 , R_o , independently is $-R_1$, $-OR_1$, $-OCOR_1$, $-SR_1$, $-F$, $-NHR_2$, $-Br$, or $-I$; and each R_d , R_e , R_i , R_j , R_m , independently is $=0$, $-R_1$, $-OR_1$, $-OCOR_1$, $-SR_1$, $-F$, $-NHR_2$, $-Br$ or $-I$; and R_g is $=0$, $-R_1$, $-OR_1$, $-OCOR_1$, $-SR_1$, $-F$, $-NHR_2$, $-Br$, $-I$, or $-C\equiv CH$;

23 and

23 24 II. Z' is defined as follows:

31 OR

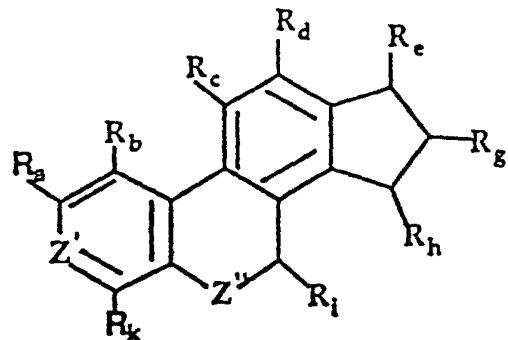
38 and .
39 III "Z" is defined as follows:

A) Z'' is Y , where Y is $-O-$, $-N-$, $>CHR_1$,

82 R_g is -OH;
83 Z' is >COH; and
84 Z" is >CH₂;
85 then R_a is not -H;
86 where, in each formula set forth above, each R₁ and R₂
87 independently is -H, or substituted or unsubstituted alkyl,
88 alkenyl or alkynyl group of 1-6 carbons.

1 2. A method for treating a mammalian disease
2 characterized by abnormal cell mitosis, said method
3 comprising administering to a mammal a cell-mitosis-
4 inhibiting compound of the formula below, said compound
5 being administered in an amount sufficient to inhibit cell
6 mitosis:

7



8 wherein:

9 I. $R_a - R_k$ are defined

10 A) each $R_a, R_b, R_c, R_d, R_g, R_h, R_i, R_k$
 11 independently is $-R_1, -OR_1, -OCOR_1, -SR_1,$
 12 $-F, -NHR_2, -Br, \text{ or } -I; \text{ and } R_e \text{ is } -R_1, -OR_1,$
 13 $-OCOR_1, -SR_1, -F, -NHR_2, -Br, -I \text{ or } -C\equiv CH;$

14 or

B) each R_a , R_b , R_c , R_d , R_k , independently is
 $-R_1$, $-OR_1$, $-OCOR_1$, $-SR_1$, $-F$, $-NHR_2$, $-Br$, or
 $-I$; and each R_{eg} , R_h , R_i , independently is
 $=O$, $-R_1$, $-OR_1$, $-OCOR_1$, $-SR_1$, $-F$, $-Br$, or
 $-I$; and R_e is $=O$, $-R_1$, $-OR_1$, $-OCOR_1$, $-SR_1$,
 $-F$, $-Br$, $-I$ or $-C\equiv CH$;

21 and

II. z' is defined as follows:

29 OR

B) Z' is $=C-X'-$ or $-X'-C=$, where R_n
 $\quad \quad \quad \quad \quad | \quad \quad \quad |$
 $\quad \quad \quad \quad R_n \quad \quad R_n$

36 and

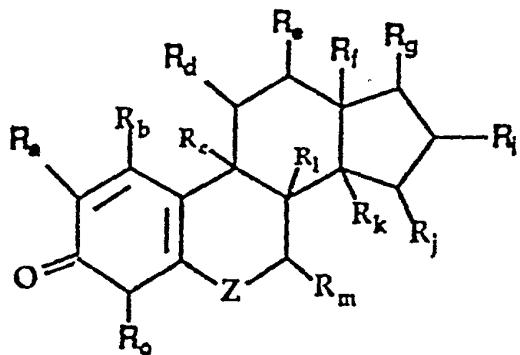
36 and
37 III. Z'' is defined as follows:

37 III. 2 11 R₁
38
39 A) Z" is Y, where Y is -O-, -N-, >CHR₁.
40

76 where, in each formula set forth above, each R_1 and R_2
77 independently is -H, or substituted or unsubstituted alkyl,
78 alkenyl or alkynyl group of 1-6 carbons.

1 3. A method for treating a mammalian disease
2 characterized by abnormal cell mitosis, said method
3 comprising administering to a mammal a cell-mitosis-
4 inhibiting compound of the formula below, said compound
5 being administered in an amount sufficient to inhibit cell
6 mitosis:

7



8 wherein:

9 I. R_a - R_o are defined as follows:

10 A) each R_a , R_b , R_c , R_d , R_e , R_f , R_i , R_j , R_k , R_l ,
11 R_m , R_o independently is $-R_1$, $-OR_1$, $-OCOR_1$,
12 $-SR_1$, $-F$, $-NHR_2$, $-Br$, or $-I$; and R_g is $-R_1$,
13 $-OR_1$, $-OCOR_1$, $-SR_1$, $-F$, $-NHR_2$, $-Br$, $-I$ or
14 $-C\equiv CH$;

15 or

16 B) each R_a , R_b , R_c , R_f , R_k , R_1 , independently
17 is $-R_1$, $-OR_1$, $-OCOR_1$, $-SR_1$, $-F$, $-NHR_2$, $-Br$,
18 or $-I$; and each R_d , R_e , R_i , R_j , R_m , R_o
19 independently is $=O$, $-R_1$, $-OR_1$, $-OCOR_1$,
20 $-SR_1$, $-F$, $-NHR_2$, $-Br$, or $-I$; and R_g is $=O$,
21 $-R_1$, $-OR_1$, $-OCOR_1$, $-SR_1$, $-F$, $-NHR_2$, $-Br$, $-I$
22 or $-C\equiv CH$;

23 and

24 II. Z is defined as follows:

25 A) Z is Y , where Y is $-O-$, $-N-$, $>CHR_1$,

26 $>C=O$, $>C-(CH_2)_nOR_2$,

27 $>C-(CH_2)_n-CR_2$, $>C-(CH_2)_n-C(=O)OR_2$,

28 $>C-(CH_2)_n-CHR_2$,

29 $>C-(CH_2)_n-CH(=O)OR_2$,

30 $>C-NH(CH_2)_n-CR_2$, $>C-NH(CH_2)_n-CHR_2$,

31 $>C-NH(CH_2)_n-CH(=O)OR_2$,

32 $>C-NH(CH_2)_n-C(=O)OR_2$, $>C-NH(CH_2)_n-OR_2$,

52 $\begin{array}{c} \text{R}_1 \\ | \\ >\text{C}-\text{(CH}_2\text{)}_n-\text{NHC-OR}_2, \end{array}$ 53 $\begin{array}{c} \text{O} \\ | \\ >\text{C}(\text{CH}_2\text{)}_n\text{NHCR}_2, \end{array}$ 54 $\begin{array}{c} \text{R}_1 \\ | \\ >\text{C}(\text{CH}_2\text{)}_n\text{NHCR}_2, \end{array}$ 55

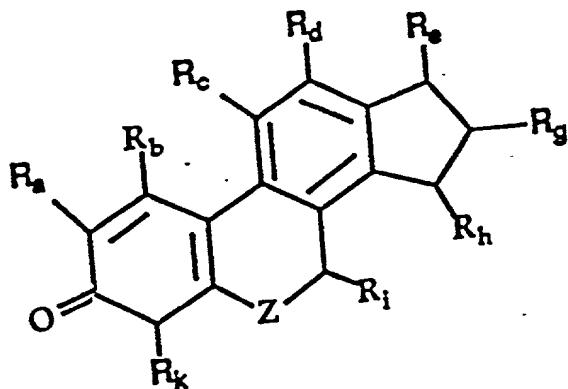
56 $\begin{array}{c} \text{R}_1 \\ | \\ >\text{C}-(\text{CH}_2)_n-\text{NH}-\text{CHR}_2, \end{array}$ 57 $\begin{array}{c} \text{OH} \\ | \\ >\text{C}-(\text{CH}_2)_n-\text{NH}-\text{COR}_2, \end{array}$ or 58

59
60
61 $\begin{array}{c} R_1 \\ | \\ >C-(CH_2)_n-NH-CH_2OR_2, \text{ where } n \text{ is } 0-6; \end{array}$

62 or

66 is $-R_1$, $-OR_1$, $-SR_1$, $-F$, $-NHR_2$, $-Br$ or $-I$;
67 where, in each formula set forth above, each R_1 and R_2
68 independently is $-H$, or substituted or unsubstituted alkyl,
69 alkenyl or alkynyl group of 1-6 carbons.

1 4. A method for treating a mammalian disease
2 characterized by abnormal cell mitosis, said method
3 comprising administering to a mammal a cell-mitosis-
4 inhibiting compound of the formula below, said compound
5 being administered in an amount sufficient to inhibit cell
6 mitosis;



7 wherein:

8 I. R_a - R_k are defined as follows:

9 A) each R_a , R_b , R_c , R_d , R_g , R_h , R_i , R_k
 10 independently is $-R_1$, $-OR_1$, $-OCOR_1$, $-SR_1$,
 11 $-F$, $-NHR_1$, $-Br$, or $-I$; and R_e is $-R_1$, $-OR_1$,
 12 $-OCOR_1$, $-SR_1$, $-F$, $-NHR_1$, $-Br$, $-I$ or $-C\equiv CH$;

13 or

14 B) each R_a , R_b , R_c , R_d , independently is $-R_1$,
 15 $-OR_1$, $-OCOR_1$, $-SR_1$, $-F$, $-NHR_1$, $-Br$, or $-I$
 16 and each R_g , R_h , R_i , R_k independently is
 17 $=O$, $-R_1$, $-OR_1$, $-OCOR_1$, $-SR_1$, $-F$, $-NHR_1$, $-Br$
 18 or $-I$; and R_e is $=O$, $-R_1$, $-OR_1$, $-OCOR_1$,
 19 $-SR_1$, $-F$, $-NHR_1$, $-Br$, $-I$ or $-C\equiv CH$;

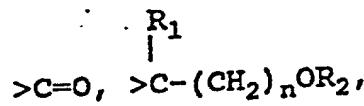
20 and

21 II. Z is defined as follows:

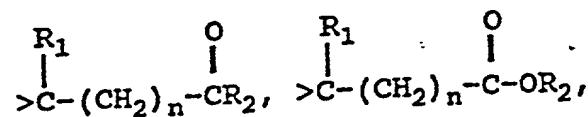
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A) Z is Y , where Y is $-O-$, $-N-$, $>CHR_1$,

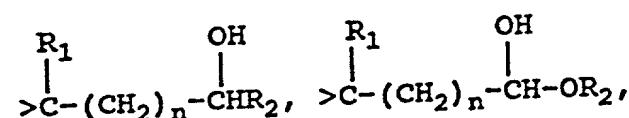
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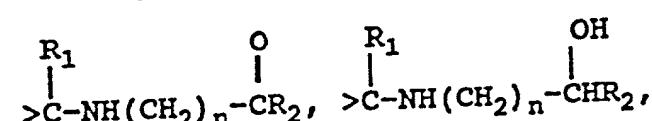
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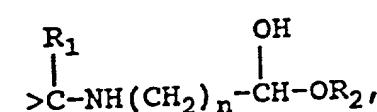
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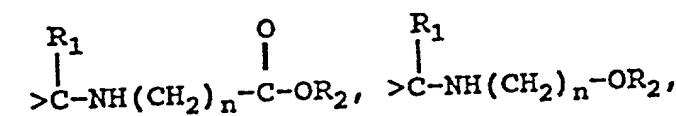
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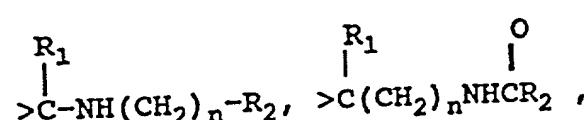
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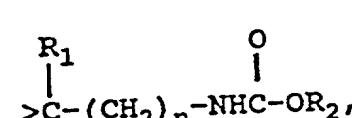
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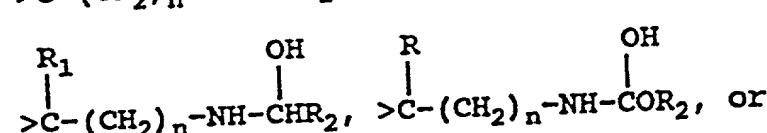
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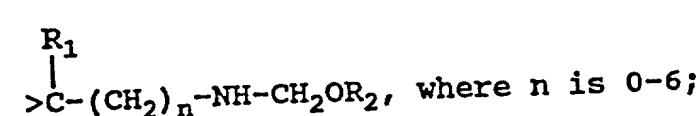
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55 or

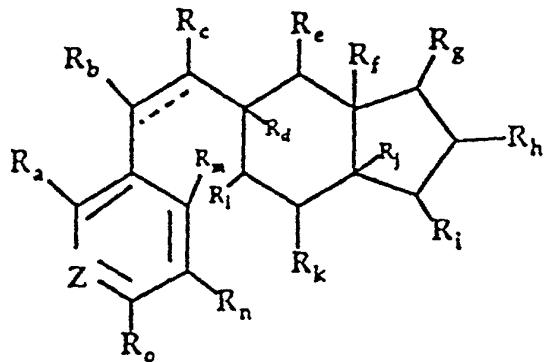
B) Z is $-Y-CH-$ or $-CH-Y-$, where R_n

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59 is $-R_1$, $-OR_1$, $-SR_1$, $-F$, $-NHR_2$, $-Br$ or $-I$;
60 where, in each formula set forth above, each R_1 and R_2
61 independently is $-H$, or substituted or unsubstituted alkyl,
62 alkenyl or alkynyl group of 1-6 carbons.

1 5. A method for treating a mammalian disease
2 characterized by abnormal cell mitosis, said method
3 comprising administering to a mammal a cell-mitosis-
4 inhibiting compound of the formula below, said compound
5 being administered in an amount sufficient to inhibit cell
6 mitosis:



8 wherein:

9 I. R_a - R_o are defined as follows:

10 A) each R_a , R_b , R_c , R_d , R_e , R_f , R_g , R_h , R_j , R_k ,
 11 R_l , R_m , R_n , R_o independently is $-R_1$, $-OR_1$,
 12 $-OCOR_1$, $-SR_1$, $-F$, $-NHR_2$, $-Br$, or $-I$; and R_i
 13 is $-R_1$, $-OR_1$, $-OCOR_1$, $-SR_1$, $-F$, $-NHR_2$, $-Br$,
 14 $-I$ or $-C\equiv CH$;

15 or

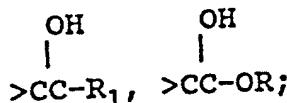
16 B) each R_a , R_d , R_f , R_j , R_m , R_n , R_o
17 independently is $-R_1$, $-OR_1$, $-OCR_1$, $-SR_1$,
18 $-F$, $-NHR_2$, $-Br$, or $-I$; and each R_b , R_c , R_e ,
19 R_g , R_h , R_k , R_l independently is $=0$,
20 $-R_1$, $-OR_1$, $-OCOR_1$, $-SR_1$, $-F$, $-NHR_1$, $-Br$ or
21 $-I$; and R_i is $=0$, $-R_1$, $-OR_1$, $-OCOR_1$, $-SR_1$,
22 $-F$, $-Br$, $-I$ or $-C\equiv CH$;

23 or

24 C) each R_a , R_b , R_c , R_d , R_f , R_j , R_m , R_n , R_o
25 independently is $-R_1$, $-OR_1$, OCR_1 , $-SR_1$, $-F$,
26 $-NHR_2$, $-Br$, $-I$ and each R_e , R_g , R_h , R_k , R_l
27 independently is $=0$, $-R_1$, $-OR_1$, $-OCOR_1$,
28 $-SR_1$, $-F$, $-NHR_1$, $-Br$ or $-I$; and R_i is $=0$,
29 $-R_1$, $-OR_1$, $-OCOR_1$, $-SR_1$, $-F$, $-Br$, $-I$ or
30 $-C\equiv CH$;

31 II. Z is defined as follows:

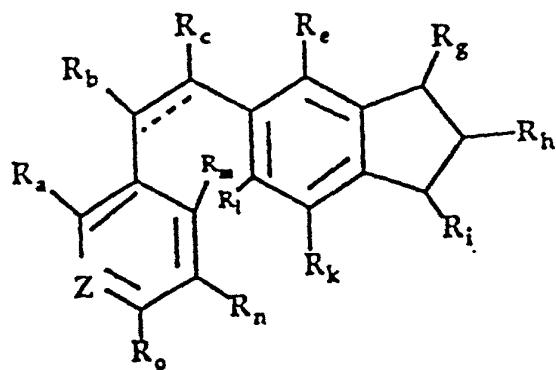
32 A) Z is X, where X is $>COR_1$, $>CC-R_1$, $>CC-OR_1$,
33



38 or

1 6. A method for treating a mammalian disease
2 characterized by abnormal cell mitosis, said method
3 comprising administering to a mammal a cell-mitosis-
4 inhibiting compound of the formula below, said compound
5 being administered in an amount sufficient to inhibit cell
6 mitosis:

7



8 wherein:

9 I. R_a - R_o are defined as follows:

10 A) each R_a , R_b , R_c , R_e , R_g , R_h , R_k , R_i , R_m , R_n ,
11 R_o independently is $-R_1$, $-OR_1$, $-OCOR_1$,
12 $-SR_1$, $-F$, $-NHR_2$, $-Br$, or $-I$; and R_i is $-R_1$,
13 $-OR_1$, $-OCOR_1$, $-SR_1$, $-F$, $-NHR_2$, $-Br$, $-I$ or
14 $-C\equiv CH$;

15 or

16 B) each R_a , R_e , R_i , R_m , R_n , R_o independently
17 is $-R_1$, $-OR_1$, $-OCOR_1$, $-SR_1$, $-F$, $-NHR_2$, $-Br$,
18 $-I$ and each R_b , R_c , R_g , R_h is $=O$, $-R_1$,
19 $-OR_1$, $-OCOR_1$, $-SR_1$, $-F$, $-NHR_1$, $-Br$ or $-I$;
20 and R_i is $=O$, $-R_1$, $-OR_1$, $-OCOR_1$, $-SR_1$, $-F$,
21 $-NHR_1$, $-Br$, $-I$ or $-C\equiv CH$;

22 or

23 C) each R_a , R_b , R_c , R_e , R_k , R_m , R_n , R_o
24 independently is $-R_1$, $-OR_1$, $-OCOR_1$, $-SR_1$,
25 $-F$, $-NHR_2$, $-Br$, $-I$, and each R_h , R_i
26 independently is $=O$, $-R_1$, $-OR_1$, $-OCOR_1$,
27 $-SR_1$, $-F$, $-NHR_1$, $-Br$ or $-I$; and R_i is $=O$,
28 $-R_1$, $-OR_1$, $-OCOR_1$, $-SR_1$, $-F$, $-NHR_1$, $-Br$, $-I$
29 or $-C\equiv CH$;

30 and

31 I. z is defined as follows:

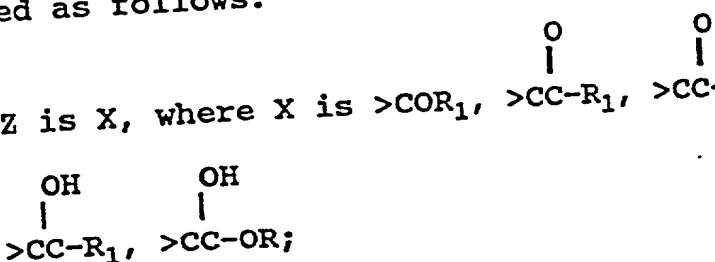
32 A) z is X , where X is $>COR_1$, $>CC-R_1$, $>CC-OR_1$,
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35 $>CC-R_1$, $>CC-OR_1$

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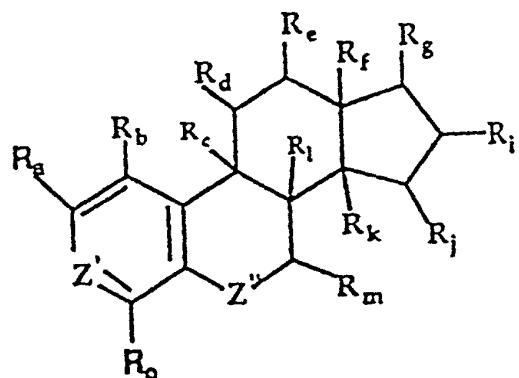
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38 or



1 7. A compound of the general formula below, said
2 compound being a cell-mitosis-inhibiting compound:

3



4 wherein:

5 I. R_a - R_o are defined as follows:
6 (A) each R_a , R_b , R_c , R_d , R_e , R_f , R_i , R_j , R_k , R_l ,
7 R_m , R_o , independently is $-R_1$, $-OR_1$,
8 $-OCOR_1$, $-SR_1$, $-F$, $-NHR_2$, $-Br$, or $-I$; and R_g
9 is $-R_1$, $-OR_1$, $-OCOR_1$, $-SR_1$, $-F$, $-NHR_2$, $-Br$,
-I or $-C\equiv CH$;

10

11 or

12 (B) each R_a , R_b , R_c , R_f , R_k , R_l , R_o , is $-R_1$,
13 $-OR_1$, $-OCOR_1$, $-SR_1$, $-F$, $-NHR_2$, $-Br$, or $-I$;
14 and each R_d , R_e , R_i , R_j , R_m , independently
15 is $=O$, $-R_1$, $-OR_1$, $-OCOR_1$, $-SR_1$, $-F$, $-NHR_2$,
16 $-Br$ or $-I$; and R_g is $=O$, $-R_1$, $-OR_1$, $-OCOR_1$,
17 $-SR_1$, $-F$, $-NHR_2$, $-Br$, $-I$ or $-C\equiv CH$;

18

and

19 II. Z' is defined as follows:

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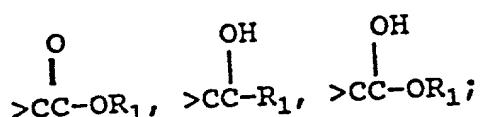
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A) Z' is X , where X is $>COR_1$, $>CC-R_1$,

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26 or

27 B) Z' is $=C-X'-$ or $-X'-C=$, where R_n

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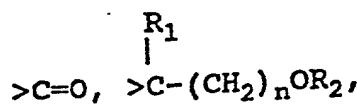
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34 III. Z'' is defined as follows:

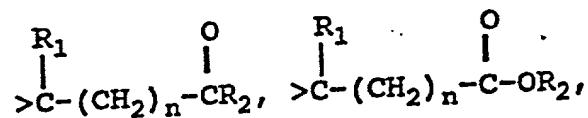
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A) Z'' is Y , where Y is $-O-$, $-N-$, $>CHR_1$,

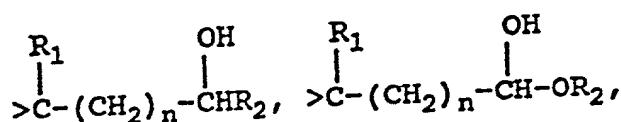
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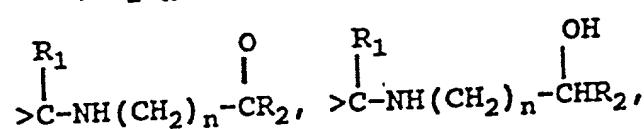
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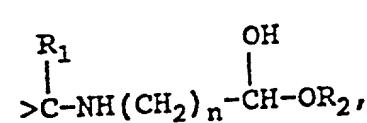
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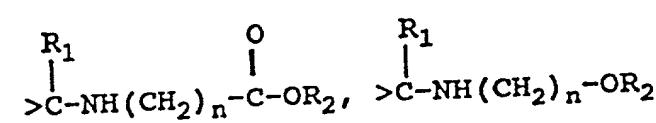
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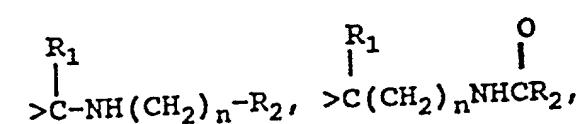
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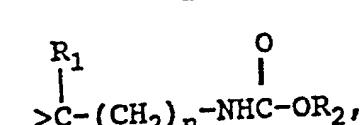
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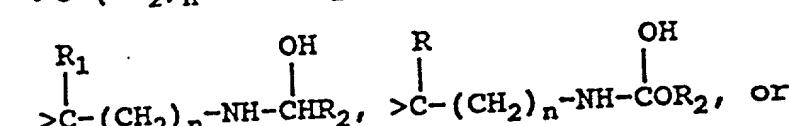
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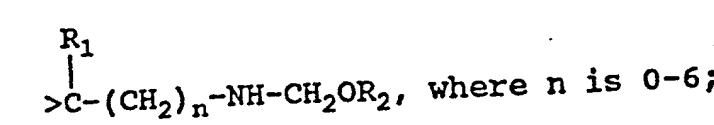
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68 or

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B) Z'' is $-Y-CH-$ or $-CH-Y-$ where R_p

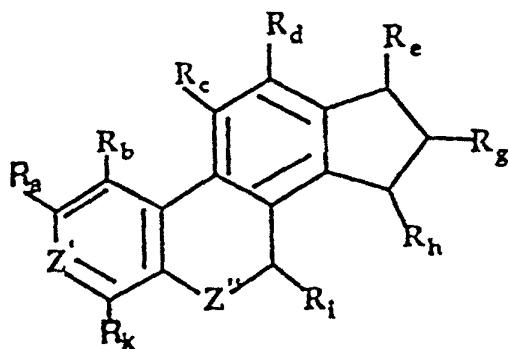


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73 is $-R_1$, $-OR_1$, $-SR_1$, $-F$, $-NHR_2$, $-Br$ or $-I$;
74 provided that when:
75 3) each R_b , R_c , R_d , R_e , R_j , R_k , R_l , R_m , is $-H$;
76 R_f is $-CH_3$;
77 R_g is $-OH$, $-OCCH_3$;
78 R_i is $-H$, $-OH$, or $=O$;
79 R_o is $-H$ or $-Br$;
80 z' is $>COH$; and
81 z'' is $>CH_2$ or $-OH$; then
82 R_a is not $-F$, $-Br$, $-OH$ or $-H$;
83
84 and
85 4) each R_b , R_c , R_d , R_e , R_i , R_j , R_k , R_l ,
86 R_m , is $-H$;
87 R_f is $-CH_3$;
88 R_g is $-OH$; and
89 z'' is $>CH_2$; then
90 z' is not $>COCH_3$ or $>COCCH_3$; and
91 each R_a , R_o independently or together are
92 not $-OCH_3$ or $-H$;
93
94 and
95 5) each R_c , R_e , R_j , R_k , R_l , R_m , R_o is $-H$;
96 R_a is $-H$ or $-OCH_3$;
97 R_b is $-H$ or $-CH_3$;
98 R_d is $-OH$;
99 R_f is $-CH_3$;
100 R_g is $=O$;
101 R_i is $-OH$, $=O$ or $-C\equiv CH$; and
102 z'' is $>CH_2$; then
103
104 z' is not $>COH$; $>COCCH_3$, or $-H$;
105
106

107 where, in each formula set forth above, each R_1 and R_2
108 independently is -H, or substituted or unsubstituted alkyl,
109 alkenyl or alkynyl group of 1-6 carbons.

1 8. A compound of the general formula below, said
2 compound being a cell-mitosis-inhibiting compound:

3



4 wherein:

5 I. R_a - R_k are defined as follows:

6 A) each R_a , R_b , R_c , R_d , R_g , R_h , R_i , R_k
7 independently is $-R_1$, $-OR_1$, $-OCOR_1$, $-SR_1$,
8 $-F$, $-NHR_2$, $-Br$, or $-I$; and R_e is $-R_1$, $-OR_1$,
9 $-OCOR_1$, $-SR_1$, $-F$, $-NHR_2$, $-Br$, $-I$ or $-C\equiv CH$;

10 or

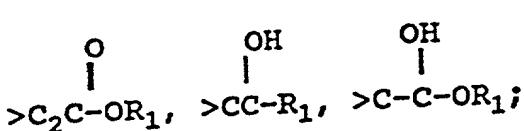
11 B) each R_a , R_b , R_c , R_d , R_k , is $-R_1$, $-OR_1$,
12 $-OCOR_1$, $-SR_1$, $-F$, $-NHR_2$, $-Br$, or $-I$; and
13 each R_g , R_h , R_i , independently is $=O$,

$-R_1$, $-OR_1$, $-OCOR_1$, $-SR_1$, $-F$, $-Br$, or $-I$;
 and R_e is $=0$, $-R_1$, $-OR_1$, $-OCOR_1$, $-SR_1$, $-F$,
 $-Br$, $-I$ or $-C\equiv CH$;

17 and

17 and
18 I z' is defined as follows:

19
20 A) z' is x, where x is >COR₁, >C₂C-R₁,

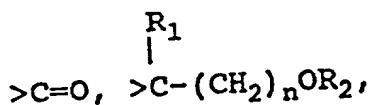


25 or

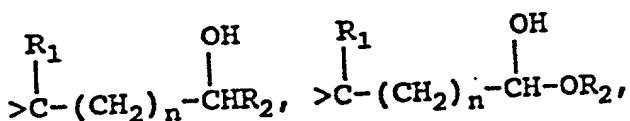
32 and

32 and
33 IT "Z" is defined as follows:

A) Z'' is Y, where Y is $-O-$, $-N-$, $>CHR_1'$



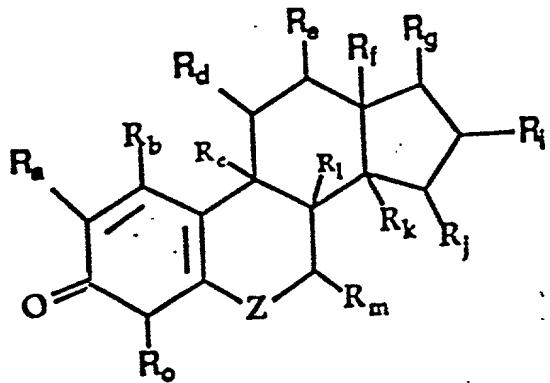
$$>C-(CH_2)_n-CR_2, >C-(CH_2)_n-C-OR_2,$$



$$>C-\overset{R_1}{\underset{|}{\text{NH}}}-\overset{O}{\underset{|}{\text{CH}_2}}-\overset{R_2}{\underset{|}{\text{CR}}}_2, >C-\overset{R_1}{\underset{|}{\text{NH}}}-\overset{O}{\underset{|}{\text{CH}_2}}-\overset{OH}{\underset{|}{\text{CH}}}-\overset{R_2}{\underset{|}{\text{CR}}}_2,$$

67 or

1 9. A compound of the general formula below, said
2 compound being a cell-mitosis-inhibiting compound:



3 wherein:

4 I. R_a - R_o are defined as follows:

5 A) each R_a , R_b , R_c , R_d , R_e , R_f , R_i , R_j , R_k , R_l , R_m , R_o independently is $-R_1$, $-OR_1$, $-OCOR_1$, $-SR_1$, $-F$, $-NHR_2$, $-Br$, or $-I$; and R_g is $-R_1$, $-OR_1$, $-OCOR_1$, $-SR_1$, $-F$, $-NHR_2$, $-Br$, $-I$ or $-C\equiv CH$;

6

7

8

9

10 or

11 B) each R_a , R_b , R_c , R_f , R_k , R_l , independently is $-R_1$, $-OR_1$, $-OCOR_1$, $-SR_1$, $-F$, $-NHR_2$, $-Br$, or $-I$; and each R_d , R_e , R_i , R_j , R_m , R_o independently is $=O$, $-R_1$, $-OR_1$, $-OCOR_1$, $-SR_1$, $-F$, $-NHR_2$, $-Br$, $-I$; and R_g is $=O$, $-R_1$, $-OR_1$, $-OCOR_1$, $-SR_1$, $-F$, $-NHR_2$, $-Br$, $-I$ or $-C\equiv CH$;

12

13

14

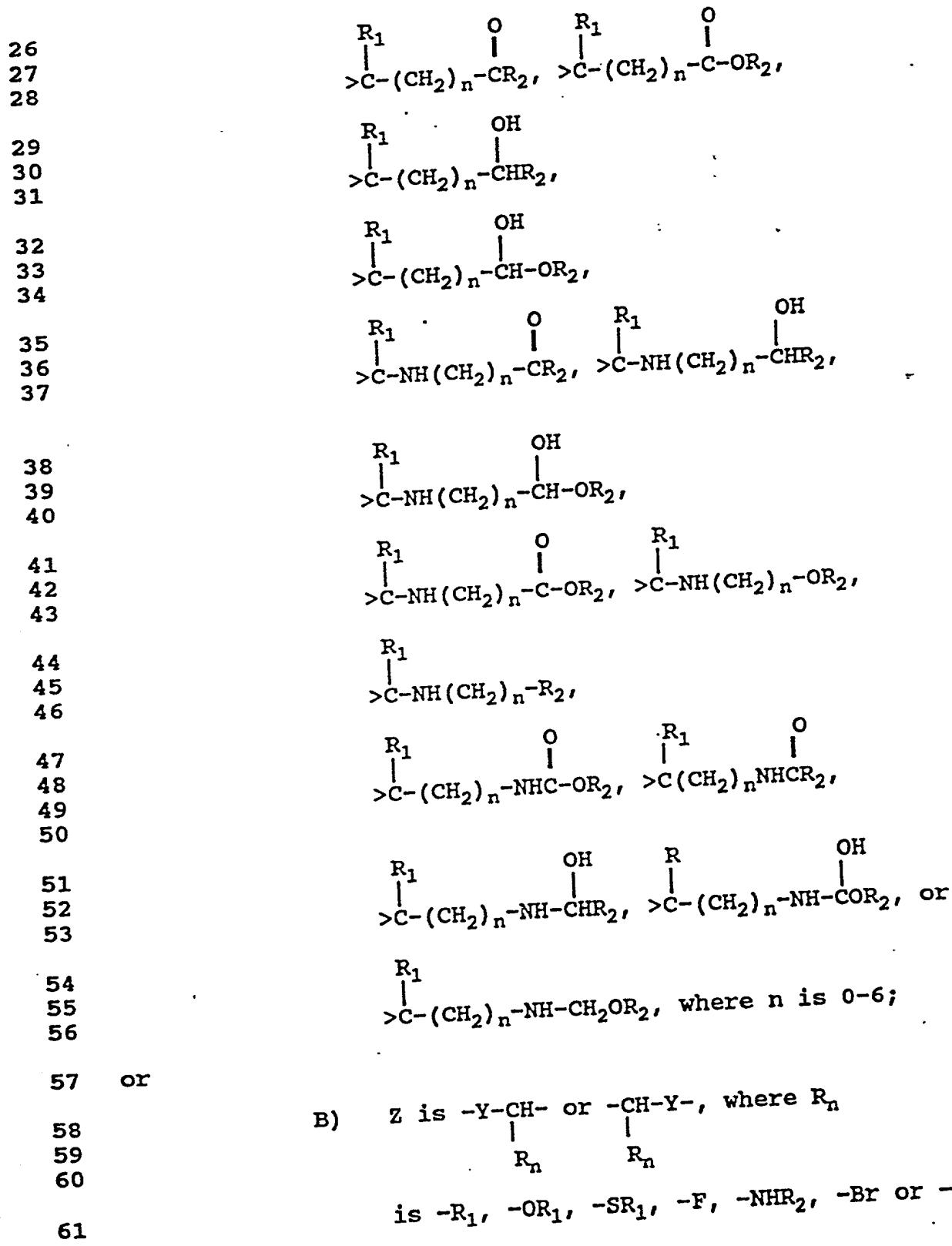
15

16

17

18 and

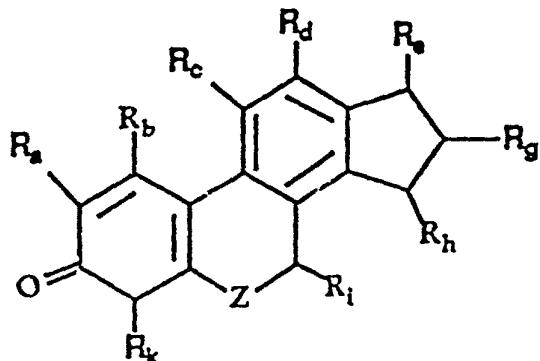
19 II. Z is defined as follows:



62 where, in each formula set forth above, each R_1 and R_2
63 independently is -H, or substituted or unsubstituted alkyl,
64 alkenyl or alkynyl group of 1-6 carbons.

1 10. A compound of the general formula below, said
2 compound being a cell-mitosis-inhibiting compound:

3



4 wherein:

5 I. R_a - R_k are defined as follows:

6 A) each R_a , R_b , R_c , R_d , R_g , R_h , R_i , R_k
7 independently is $-R_1$, $-OR_1$, $-OCOR_1$, $-SR_1$,
8 $-F$, $-NHR_1$, $-Br$, or $-I$; and R_e is $-R_1$, $-OR_1$,
9 $-OCOR_1$, $-SR_1$, $-F$, $-NHR_1$, $-Br$, $-I$ or $-C\equiv CH$;

10 or

11 B) each R_a , R_b , R_c , R_d , independently is $-R_1$,
12 $-OR_1$, $-OCOR_1$, $-SR_1$, $-F$, $-NHR_1$, $-Br$, or $-I$;
13 and each R_g , R_h , R_i , R_k independently is
14 $=O$, $-R_1$, $-OR_1$, $-OCOR_1$, $-SR_1$, $-F$, $-NHR_1$, $-Br$
15 or $-I$; and R_e is $-R_1$, $-OR_1$, $-OCOR_1$, $-SR_1$,
16 $-F$, $-NHR_1$, $-Br$, $-I$ or $-C\equiv CH$;

17 II. Z is defined as follows:

18
19
20

1) Z is Y , where Y is $-O-$, $-N-$, $>CHR_1$,

21
22
23

$>C=O$, $>C-(CH_2)_nOR_2$,

24
25
26

$>C-(CH_2)_n-CR_2$, $>C-(CH_2)_n-C(=O)OR_2$,

27
28
29

$>C-(CH_2)_n-CHR_2$, $>C-(CH_2)_n-CH(OH)OR_2$,

30
31
32

$>C-NH(CH_2)_n-CR_2$, $>C-NH(CH_2)_n-CH(OH)R_2$,

33
34
35

$>C-NH(CH_2)_n-CH(OH)OR_2$,

36
37
38

$>C-NH(CH_2)_n-C(=O)OR_2$, $>C-NH(CH_2)_n-OR_2$,

39
40
41

$>C-NH(CH_2)_n-R_2$, $>C(CH_2)_n-NHCR_2$

42
43
44

$>C-(CH_2)_n-NHC(=O)OR_2$,

45
46
47

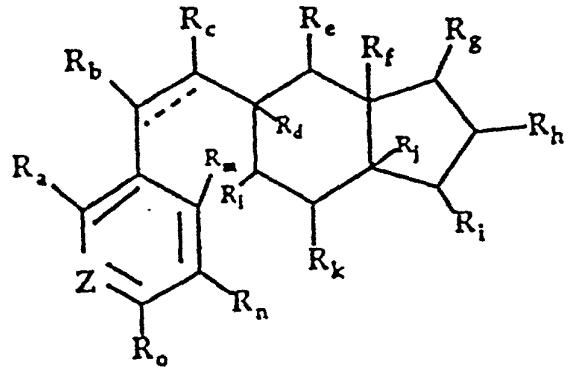
$>C-(CH_2)_n-NH-CHR_2$, $>C-(CH_2)_n-NH-C(=O)R$, or
 $>C-(CH_2)_n-NH-CH_2OR_2$,

48
49
50

$>C-(CH_2)_n-NH-CH_2OR_2$, where n is 0-6;

51 or

1 11. A compound of the general formula below, said
2 compound being a cell-mitosis-inhibiting compound:
3



4 wherein:

5 I. $R_a - R_g$ are defined as follows:

11 or

12 B) each R_a , R_d , R_f , R_j , R_m , R_n , R_o
13 independently is $-R_1$, $-OR_1$, $-OCR_1$, $-SR_1$,
14 $-F$, $-NHR_2$, $-Br$, $-I$; and each R_b , R_c , R_e ,
15 R_g , R_h , R_k , R_l independently is $=0$, $-R_1$,
16 $-OR_1$, $-OCOR_1$, $-SR_1$, $-F$, $-NHR_1$, $-Br$ or $-I$;
17 and R_i is $=0$, $-R_1$, $-OR_1$, $-OCOR_1$, $-SR_1$, $-F$,
18 $-NHR_1$, $-Br$, $-I$ or $-C\equiv CH$;

19 or

c) each R_a , R_b , R_c , R_d , R_f , R_j , R_m , R_n , R_o independently is $-R_1$, $-OR_1$, OCR_1 , $-SR_1$, $-F$, $-NHR_2$, $-Br$, $-I$; and each R_e , R_g , R_h , R_k , R_l independently is $=O$, $-R_1$, $-OR_1$, $-OCOR_1$, $-SR_1$, $-F$, $-NHR_1$, $-Br$ or $-I$; and R_i is $=O$, $-R_1$, $-OR_1$, $-OCOR_1$, $-SR_1$, $-F$, $-NHR_1$, $-Br$, $-I$ or $-C\equiv CH$;

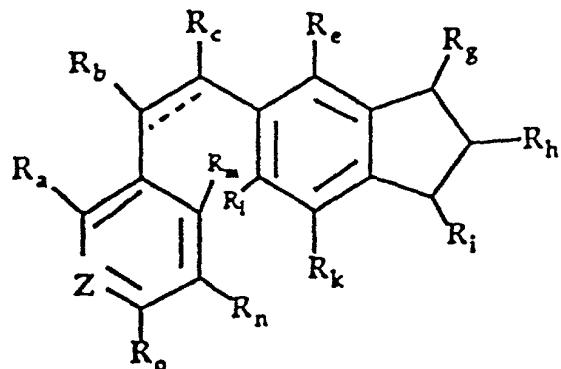
27 and

28 T. Z is defined as follows:

1) Z is X, where X is >COR_1 , >CC-R_1 , >CC-OR_1 ,

1 12. A compound of the general formula below, said
2 compound being a cell-mitosis-inhibiting compound:

3



4 wherein:

5 I. R_a - R_o are defined as follows:

6 A) each R_a , R_b , R_c , R_e , R_g , R_h , R_k , R_i , R_m , R_n ,
7 R_o independently is $-R_1$, $-OR_1$, $OCOR_1$, $-SR_1$,
8 $-F$, $-NHR_2$, $-Br$, or $-I$; and R_i is $-R_1$, $-OR_1$,
9 $-OCOR_1$, $-SR_1$, $-F$, $-NHR_2$, $-Br$, $-I$ or $-C\equiv CH$;

10 or

11 B) each R_a , R_e , R_i , R_m , R_n , R_o independently
12 is $-R_1$, $-OR_1$, $-OCOR_1$, $-SR_1$, $-F$, $-NHR_2$, $-Br$,
13 $-I$; and each R_b , R_c , R_g , R_h is $=O$, $-R_1$,
14 $-OR_1$, $-OCOR_1$, $-SR_1$, $-F$, $-NHR_1$, $-Br$ or $-I$;
15 and R_i is $=O$, $-R_1$, $-OR_1$, $-OCOR_1$, $-SR_1$, $-F$,
16 $-NHR_1$, $-Br$, $-I$ or $-C\equiv CH$;

17 or

18 C) each R_a , R_b , R_c , R_e , R_k , R_m , R_n , R_o
19 independently is $-R_1$, $-OR_1$, $OCOR_1$, $-SR_1$,
20 $-F$, $-NHR_2$, $-Br$, $-I$; and each R_g , R_h
21 independently is $=O$, $-R_1$, $-OR_1$, $-OCOR_1$,
22 $-SR_1$, $-F$, $-NHR_1$, $-Br$ or $-I$; and R_i is $=O$,
23 $-R_1$, $-OR_1$, $-OCOR_1$, $-SR_1$, $-F$, $-NHR_1$, $-Br$, $-I$
24 or $-C\equiv CH$;

25 and

26 II. Z is defined as follows:

27 A) Z is X , where X is $>COR_1$, $>CC-R_1$, $>CC-OR_1$,

28

29

30
$$>CC-R_1, >CC-OR_1;$$

31

32

33 or

34 B) Z is $=C-X'-$ or $-X'-C=$, where R_p

35

36

$$\begin{array}{c} O & O \\ | & | \\ OH & OH \\ | & | \\ >CC-R_1, >CC-OR_1; \\ R_p & R_p \end{array}$$

1 13. The method of claim 1, wherein said
2 cell-mitosis-inhibiting composition is 2-methoxyestradiol.

1 14. The method of claim 1, wherein said
2 cell-mitosis-inhibiting composition is 2-fluoroestradiol.

1 15. The method of claim 1, wherein said
2 cell-mitosis-inhibiting composition is 2-bromoestradiol.

1 16. The method of claim 1, wherein said
2 cell-mitosis-inhibiting composition is 2-methoxyestrone.

1 17. The method of claim 1, wherein said cell-
2 mitosis-inhibiting composition is 17-ethynylestradiol.

1 18. The method of claims 1 or 2 wherein said
2 compound is further characterized in that

3 A) Z' is $=C-X'-$ or $-X'-C=$; and

5 11 11 11
1 11 11 11

$$8 \qquad \qquad \qquad R_p \qquad \qquad R_p$$

9 B) Z' is X; and Z" is -

0.0

1 19. The method of claims 3 or 4 wherein said
2 compound is further characterized in that Z is
3 -Y-CH- or -CH-Y-.

$$4 \quad \quad \quad R_n \quad \quad \quad R_n$$

1 20. The method of claims 5 or 6 wherein said
2 compound is further characterized in that Z is

3 $=C-X'-$ or $-X'-C=.$

$$4 \quad | \quad R_p \quad | \quad R_p$$

1 21. The compound of claims 7 or 8, wherein said
2 compound is further characterized in that

$$5 \quad \quad \quad R_n \quad \quad \quad R_m$$

9 B), z is x, and z is -I-CH- or -CH-I-, or
10
11

11 R_p R_p
12 C) Z' is $=\text{C}-\text{X}'-$ or $-\text{X}'-\text{C}=$; and Z'' is

13 R₁ R₂
14

1 22. The compound of claims 9 or 10, wherein said
2 compound is further characterized in that Z is .

3 -Y-CH- or -CH-Y-.
4 | |

5 R_n R_n

1 23. The compound of claims 11 or 12, wherein said
2 compound is further characterized in that Z is
3 $=C-X'-$ or $-X'-C=$.
4 | |
5 R_p R_p

1 24. The method of any one of claims 1-6, wherein at
2 least one of R_a-R_p is -OCH₃.

1 25. The compound of any one of claims 7-12, wherein
2 at least one of R_a-R_p is -OCH₃.